

HIV/AIDS is affecting and will continue to affect economies and society at all levels, from the household to the macro-economy.

Between these two extremes there are effects on communities, enterprises, and social and economic sectors. It is at the lower and middle levels, which include the productive sectors, that the worst effect may be experienced and interventions are most urgently required. The epidemic will affect production in two ways. Firstly there will be increased morbidity (illness) and mortality (death) among the workers. Secondly there will be changes in earning capacity and therefore in patterns of expenditure. People may earn less and divert their incomes from consumption and savings to health care.

This AIDS Brief provides some ideas as to how the mining sector may be affected and what types of response may be required from government planners, enterprise owners, managers and trade union officials.

Definition

In many countries mining is a vital component of the national economy. This is particularly the case because, although mining may not provide much employment or produce a large proportion of GDP, invariably the bulk of output is exported, making the sector a major foreign exchange earner.

Mining (which is always linked to quarrying as a sector) is defined as the extracting, dressing and treatment of naturally occurring minerals. This includes solids such as coal and ores, liquids such as crude petroleum, and natural gases. The sector includes underground and surface mines, quarries and the operation of oil and gas wells. Mining further includes all supplemental activities such as crushing, screening, washing, cleaning, grading, milling, flotation, melting, pelleting, topping and any other activities required to render the materials marketable.

These diverse operations vary from the very small one or two person enterprises involved in panning for gold in Brazil or Zimbabwe, to the vast sophisticated mines of Southern Africa, Papua New Guinea and East Asia, which may employ up to 50 000 miners and work to depths of up to three kilometres. Many of the larger mining enterprises may be wholly or partly owned by or subcontracted to major multinational companies. In some areas of the world, for example Western India, small-scale mining may provide an important seasonal addition to low regional agricultural incomes by employing the poorest rural sub-populations during periods of low demand for their labour in agriculture.



Checklist

☐ Vulnerability to HIV Spread

Human Resources:

- ☐ Are employees single/males?
- ☐ Drug and alcohol abuse?
- ☐ What are minimum numbers/working hours to maintain existing production?
- ☐ Are there crucial workers in the production process?
- ☐ Can more people be trained or employed if workers are lost?

Training:

- ☐ Is training done?
- ☐ Current facilities and degree of utilisation?
- ☐ Potential for multi-skilling?
- ☐ Can HIV/AIDS be included in all training programmes?

Productivity:

- ☐ Does the company have allowances for time off (sick leave, compassionate leave, funerals)?
- ☐ What methods of monitoring this can be put in place?
- ☐ What impact will AIDS have on numbers and working hours?

Employment benefits:

- ☐ In-house or external medical costs?
- ☐ Pension schemes, life insurance?
- ☐ Benefits for sick employees and for their dependants?

Prevention activities:

- ☐ Is there an ongoing HIV/AIDS workplace campaign?
- ☐ Does it have the support of management and unions?
- ☐ Are condoms and STI treatment available?

AIDS impact assessment:

- ☐ Should the company carry out an impact assessment?
- ☐ Should the company prepare an AIDS or life-threatening disease policy?

Background

Mining and agriculture are the primary sectors of an economy. In classic development economics, it was the surplus generated from these sectors and the related processes which stimulated economic growth leading to the emergence of a modernised economy. Many countries are still highly dependent on primary production. This has given rise to what are referred to as “mineral economies” - where typically 40% of exports and 10% of GDP is generated from minerals.

In global terms fuel, minerals and metals constituted 12% of world exports in 1992. Mineral and metal exports from low-income economies, excluding China and India, accounted for 40% of total merchandise exports from these countries in 1992. A large percentage of this was oil. Between 1990-1993, Angola and Nigeria were dependent on petroleum for 90% of their export earnings, with Zambia equally dependent on the sale of copper. Other countries dependent on the export earnings of a single mineral were: Botswana (87% - diamonds), Congo (75% - petroleum), Gabon (82% - petroleum), Guinea (70% - bauxite ore/alumina), Libya (95% - petroleum) and Mauritania (65% - iron ore).

The mining sector is not a major employer of labour, but nonetheless its use of labour has certain key characteristics that make it different from other sectors. In 1985 in China 8.7% of the working population was employed in mining. In many other Asian countries, however, this portion is less than 1%. In South Africa there are more than 610 000 individuals employed in the mining sector, which accounts for approximately 4.5% of formal employment.

Mining has remained relatively labour intensive, with large numbers of employees having fairly low skill levels while requiring a core of highly skilled people to keep the production process going. For example, in South Africa skilled personnel comprise only 11% of

the mine labour force. As mining develops it becomes more capital intensive and less dependent on unskilled labour.

Mining is also dominated almost entirely by males. In the developing world virtually no females are employed in the sector, the argument being that the work is too hard and too dangerous. Indeed in some countries the employment of females underground is prohibited by legislation. Mining still employs significant numbers of migrant workers. This is because mines are, of necessity, located where the minerals are; labour may not be available locally, thus workers will have to be brought in, and where the location is inhospitable they will not bring their families; providing infrastructure for single migrants is cheaper than providing it for workers and their families, and mines may have a limited lifespan anyway; and labour may not regard the location or the work as permanent, thus will not relocate wives and families.

An additional unique feature of mining is that as mines are often located in remote locations they may operate as self-sufficient communities, with the employer providing housing, health care, education and entertainment. In cases where precious minerals are being extracted, these may be closed communities, with the employees being confined to the area and outsiders not being allowed in.

A recent trend has been the growth of informal or subsistence mining in some parts of the world. It comprises small operations each employing a few people, normally in search of precious or semi-precious minerals or alluvial diamonds. The operations are usually located in remote areas and the resources exploited are generally of marginal value. A further consideration is the smuggling of minerals between various countries, which opens informal channels of mobility.

Key Elements

Labour

Labour is an essential input in mining, and the sector's use of and type of labour is unique. The key characteristics of mine labour are:

- most miners are male;
- miners are more likely to suffer occupational diseases such as silicosis (and in some settings TB);
- the work is dangerous and occupational injuries and deaths are higher than for other occupations;
- use of migrant labour is common;
- mines are located where the minerals are. This means that miners may live in remote and inhospitable parts of the world, often in closed communities;
- mines may be labour intensive but will always require a component of highly skilled and experienced employees, for example geologists and engineers. These specialists constitute potential “bottlenecks” in the production process if they become ill or die.

HIV/AIDS will have the following effects on labour:

Productivity: Productivity will be affected by morbidity (illness) and mortality (death) of workers. During illness employees will take as much time off as they are able to. This will include the maximum allowable sick leave and annual leave before they are dismissed or retired on grounds of ill-health. There will also be instances of unauthorised absenteeism due to illness. In situations where there is no job security once leave has been used up, employees may continue to work even though they are physically not really capable.

Once a person dies (or has been released from employment) they will have to be replaced, and productivity will be reduced while the replacement is trained. Employees will also require compassionate leave to care for sick family members who may be affected by HIV/AIDS. In some countries, time spent on funerals of families, friends or colleagues is considerable. In addition, with largely migrant populations, time spent away from work will be extended by periods spent travelling.

Training and Replacement of Labour: The ease with which labour can be replaced will vary depending on the labour-intensiveness of a specific operation, the level of skills employed and the general availability of labour. If suitably skilled labour is unavailable, it may take time to replace people who have become too sick to work or who have died. Because experience is very valuable in this industry, loss of experienced workers is a source of concern. There may also be small numbers of workers without whom the operation may have difficulty in functioning.

Staff Morale: The loss of colleagues, increased workloads, potential discrimination, and general uncertainty about HIV/AIDS and the fear of infection may undermine staff morale. There have been instances of workplace disruption in which workers refused to work with a colleague known or believed to be HIV-positive.

Operations

Capacity to work: The very strenuous nature of mining

plus the risk of occupational disease may speed the onset of illness among HIV-positive workers. This will not only be disadvantageous to the individual but will also have an adverse effect on productivity. It is estimated that in South Africa productivity could fall by up to 2.5% if 10% of employees are HIV-positive.

Payroll costs: employee benefits: The costs of the epidemic will be felt through the payroll depending on how this is structured. Where the employer simply pays a wage for work and the employee makes their own provision for health care, pensions, insurance and housing - or looks to the state to provide these things - then there will not be an immediate impact on a company's payroll costs. However in the longer term, it is likely that, where the state has to bear these costs, increases will be funded through higher taxes.

It is common for employers to provide benefits such as medical care, pensions, insurance, housing and death benefits to some (senior) or all of their staff. In the case of the mining industry these are likely to be provided to more employees, especially where the mine is isolated. The cost of these benefits will increase.

Medical costs: Most mining operations will provide some medical services, ranging from First Aid Stations to fully equipped hospitals. They may serve the miners only, or in some cases the neighbouring community as well.

Medical costs are set to rise with the increase in HIV, and treatment protocols are being established in a number of countries to deal with this. Of particular concern is the inter-relation between HIV and occupational diseases such as silicosis. TB is also associated with the mining industry because of both working and living conditions. These associations between diseases suggest that downstream costs of medical treatment can be avoided by greater attention to prevention measures.

Housing: Large mining enterprises will often provide housing for employees. Migrants may be accommodated in hostels. Senior workers will usually be provided with family housing, but in some cases all workers may be housed with their families. This may be a potential

Pre-employment testing

Given the nature of mine work, the issue of testing people is not a simple one in this context. There is general agreement that pre-employment testing of potential employees is misguided, expensive and unfair. Not only do individuals infected with HIV have the potential to lead productive lives for many years but the risk of workplace transmission is very small. A single pre-em-

ployment test is unlikely to be definitive unless it is confirmed by a second test some weeks after the first, and a person could contract the infection immediately after they have been tested. However, given the strenuous and stressful nature of the work, it may be in the interests of the employer and employee to know the latter's HIV status.

problem when a worker becomes incapacitated but has not left employment, as they may continue to occupy their house, and thus prevent recruitment of a replacement. It is important for employers and unions (where these exist) to develop a policy on this question if the profound traumas of illness, death and loss of household income are not to be magnified by loss of housing entitlements, and mines are to minimise difficulty in recruiting replacement staff.

Training and replacement cost for labour: The replacement cost of labour will vary depending on the labour intensity of a specific operation, the level of skills employed and the general availability of labour. If suitably skilled people are not available on the labour market, additional costs will arise from expenditure on maintaining an adequately trained labour force. There will always be frictional cost of replacing labour even if the person concerned is unskilled and there is ample labour available.

Investment: All medium and large scale mining enterprises require investment to maintain or increase capital stocks. The possible sources for this are either reinvested profits or money raised through other sources such as financial institutions or stock markets. Major investments may depend on foreign direct investment, and indeed most developing countries actively seek to attract this. Some evidence suggests that in countries where capital is in very short supply, HIV/AIDS will reduce sources of local capital as this is diverted into care and coping by the individuals and their families. There may even be “dis-saving” - the process whereby assets such as pension funds and insurance policies are surrendered in order to meet immediate needs. For foreign investors who might be considering inward investment, the HIV/AIDS situation in a country or in a particular sector or company within a country may be a consideration.

Sectoral Response

The mining sector is unique in its use of labour and style of operations. However it operates in a global market which is highly competitive and will therefore be sensitive to increases in production and input costs which may result from the epidemic.

Reducing workforce susceptibility

Workers in mining are probably more vulnerable to infection because of the nature of their work and lifestyles. The social context of dirty, dangerous work and often unpleasant living conditions, with few opportunities for leisure, create a “risk-taking environment”. This makes it difficult to reach miners with effective messages advocating behaviour change. Experience points to the following particular problems:

- opportunities for social support and intimacy are limited, particularly for migrants. Where there is little support, risk-taking is more likely;
- miners feel they have little control over their own lives. Workplace accidents may be frequent, while outside the work environment miners may feel they are controlled by the company. This means they are less open to health promotion messages, especially since alcohol consumption and sex are the two areas where they do have control; and
- exaggerated forms of masculinity - known as “machismo” in the Hispanic and Western world - is an important way in which miners overcome the fears and dangers of everyday work. This then extends into their sexual behaviour.

Workplace education campaigns must take into account the social and psychological pressures on miners.

Reducing workforce susceptibility - the employer's responsibility

Employers have a responsibility to ensure that their employees are not put at risk of illness or injury because of the nature of their work. Most countries have legislation which supports such an obligation on the part of employers. Ensuring that HIV/AIDS is not transmitted in the workplace is an extension of this obligation. Basic educational programmes and simple precautions (particularly in relation to the treatment of accidental injury in the workplace) should eradicate even the very small risk of workplace transmission.

In general workers should not be made vulnerable to infection because of the nature of their work. Workplace education campaigns should therefore be introduced and other responses will not be required unless the workers are mainly migrants living away from their families. In such situations consideration should be given to recruiting workers who are not migrants; supporting those who are migrants in bringing their families to live with them, if possible, and providing intensive health education for workers and their dependants.

Reducing employees' vulnerability: the trade union's role

In countries where trades unions are able to represent

the interests of their members, they also have an important role in ensuring that (a) any potential for workplace transmission is reduced; (b) larger employers introduce effective counselling policies for HIV-positive workers; and (c) that employees who are HIV-positive are not discriminated against in terms of employment practices, sick pay, pensions entitlements and other welfare benefits available as part of agreed employment packages.

Reducing sectoral vulnerability

There are two aspects that require consideration: protecting the labour force, and controlling costs.

Protecting the labour force

This can be done through AIDS education and prevention programmes (see above). Workplace AIDS education programmes can be enormously effective if they are run properly. It is crucial that they have the active involvement of senior management and workers' representatives. Appropriate workplace education campaigns aimed at behaviour change and condom promotion in the context of the industry should be established. In general, support can be sought from the government and non-governmental organisations.

Treatment

As there is often a direct relationship between the spread of HIV and STIs, as well as a variety of other diseases, care of the general health of the employed population is likely to (a) reduce the rate at which HIV/AIDS is contracted, and (b) reduce the rate of spread of other diseases, such as TB, which may develop in HIV-positive populations and spread into the workforce more generally. Early and appropriate treatment of employees can extend their working lives and postpone the time when employment will have to be terminated and benefits are lost. This is to the advantage of the worker, the employer (who retains skills and experience in the enterprise), families and state. Consideration may have to be given to moving workers to less strenuous jobs.

Counselling

Counselling should be provided for infected and affected individuals. Part of the counselling should encourage infected individuals to continue working. Job security should not be threatened by disclosure of HIV positive status.

Multi-skilling

Where the mine is operating with labour bottlenecks

and the productive process is dependent on a few key individuals, multi-skilling should be encouraged. This means training workers for a variety of jobs and allowing them to be flexible.

Movement towards capital-intensive operations

If labour is a serious constraint, consideration can be given to making the operation more capital intensive. However it should be noted that this will mean greater dependence on a smaller number of skilled workers and may change the financial viability of the enterprise if its market position is dependent on production using labour which is, in terms of international rankings, cheap.

Controlling costs

The epidemic will result in loss of production and increased costs. It is in the interests of all that these be contained. Managing the epidemic and understanding its implications require knowledge of:

- the labour profile of the workforce, including age, sex and job categories;
 - costs of employment;
 - direct costs of illness-related benefits;
 - employees' health and availability;
 - health facilities available to employees.
- Once these data are available they will help to:
- provide a profile and cost of the labour force;
 - estimate the trends and consequences of ill-health;
 - assess the success of prevention.

Where possible for larger companies, consideration should be given to modelling the epidemic, either using public domain software or an actuarial calculation to estimate the burden of morbidity and mortality.

In order to understand and control costs, they need to be calculated. There are two possible ways of assessing the impact. The first is to calculate the direct and indirect costs generated by an individual HIV/AIDS case and aggregate them. This approach is not satisfactory, as there will be different cost factors which it will be difficult to attribute to individuals.

A more simple method is to look at the enterprise balance-sheet and estimate the proportion of costs that can be attributed to the disease. The advantage of this is that it allows trends to be established and will enable the company to respond to specific changes in the costs.

A method for doing this is set out below (Steps 1 to 3). It can obviously be adapted for specific situations. It should be noted that in most enterprises the cost due specifically to HIV/AIDS will not be clearly identifiable,

as management will not (and should not) know which employees are HIV-positive. However, in situations where there is high HIV prevalence, increases in morbidity and mortality can be ascribed to HIV.

Step 1 Calculating the baseline labour and material costs

Input	Labour cost		Material cost		Total
	Money	%	Money	%	
...					
...					
TOTAL					

The purpose of Step 1 is to show how important labour is in the operations of the enterprise. To the costs listed in the table must be added those costs generated by: absenteeism and morbidity; excess recruitment; replacement and training costs; the Medical Department; additional sick pay; premature retirement; pensions; dependant benefits; and funeral costs. The results are summarised in Step 2.

Step 3 brings the two previous steps together to calculate the additional costs generated by ill-health within the enterprise over a time period.

Step 2 Costs generated by ill-health in an enterprise

Description	Money costs	% of total
Lost workforce		
Additional recruitment		
Medical department		
Funerals		
Pension for death and medical retirement		
TOTAL		

Step 3 Costs increase from year to year

Description	Money costs		% increase
	Year 1	Year 2	
Lost workforce			
Additional recruitment			
Medical department			
Funerals			
Pension for death and medical retirement			
Training			
Other costs specific to the enterprise			
TOTAL			

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